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1986 Committee
Educational use
of the Rattlesnake
National
Recreation Area

EDUCATIONAL USE
OF THE RATTLESNAKE NATIONAL RECREATION AREA AND WILDERNESS

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A Report

HELENA, MONTANA 59620

Prepared for Congressman Pat Williams

By

The Rattlesnake Education Committee

Edited by
Jamie Kay

May 1986

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Congressman Pat Williams
2457 Rayburn House Office Building
Washington, DC 20515

Dear Congressman Williams,

The Rattlesnake Education Committee was formed, under your direction, shortly after the public celebration of the transfer of Montana Power Company lands into public ownership. In your letter of January 25, 1984, the Committee was given the task of identifying appropriate educational uses of the Rattlesnake National Recreation Area and Wilderness and developing procedures to utilize that potential properly. We understood we were a committee whose membership represented citizens from the private sector, private enterprise, singular users such as handicapped and senior citizens, as well as educators and public land management agencies.

Since its creation, the Rattlesnake Education Committee has diligently pursued the tasks set before it. The committee first met on February 22, 1984, to analyze its duties. At that meeting, Wilderness Institute representatives volunteered to conduct a study of the membership to determine their interests and concerns. When that data was presented at a meeting on March 7, a third meeting was set for March 15, at which the chair was elected. The chair created two subcommittees: one to compile an inventory of the physical resources of the Rattlesnake, and the second to inventory personnel, programs, and activities in the area.

After a meeting on April 26 to hear reports from the subcommittees, a field trip into the Rattlesnake was scheduled for the committee members. The field trip, postponed twice due to rain, finally occurred in July. In October, you met with the Rattlesnake Education Committee to discuss their progress. The committee met again in December, and three new subcommittees were created. The first was to define the resource base and its limits; the second was to articulate roles and opportunities available for educational institutions; and the third was to define what might be done to enhance educational use by the general public.

The full committee met again at the end of May, 1985, to receive the subcommittees' completed reports. Subsequently, two additional subcommittees were organized. Based on all the information which had been received, one subcommittee was to define the need for and possible structure of an on-going group to address educational use of the Rattlesnake. The second subcommittee was to edit all pertinent previous reports into a single, meaningful document.

Enclosed please find our report regarding educational use of the Rattlesnake National Recreation Area and Wilderness. Our unique membership provided lively discussions, diverse opinions, and a broad and healthy outlook on the current and potential uses of the area. We hope the following document will provide pertinent information to all citizens and will direct appropriate concern and interaction with our natural environment in the Rattlesnake.

Sincerely,

Rita May Albano

Robert L. Deschamps III

Donald Berg

Arnold "Smoke" Elser

Arnold Bolle

Dale Harris

Neil S. Bucklew

Bill Headapohl

Cass Chinske

Wendy Holmes/Joyce Kalmes

Ernest B. Corrick

Bob Lucas

Ed Courtney

Robert R. Ream

Orville Daniels

John Toole

Submitted by



Bruce A. Bugbee
Chairman

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ACKNOWLEDGEMENTS

The Rattlesnake Education Committee wishes to acknowledge

David Blair

Jamie Kay

Phil Smith

Virginia Tribe

and

Ken Wall

for contributing their time, energy, and expertise to the work of this committee.

Our thanks also go to The Wilderness Institute for typographical preparation and to The Montana Power Company for final reproduction of this report.

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EDUCATIONAL USE OF THE RATTLESNAKE NATIONAL RECREATION AREA AND WILDERNESS

EXECUTIVE SUMMARY

Overview

The Rattlesnake National Recreation Area and Wilderness (RNRAW), some 61,000 acres located four miles north of Missoula, Montana, has been nationally recognized as an important watershed, wildlife habitat, recreation area, and wilderness. Because it contains these special qualities and is representative of habitats found throughout a major portion of the Rocky Mountains, special recognition has been placed on RNRW's value as an educational resource. In January 1984, Congressman Pat Williams (D-Montana) directed the formation of the Rattlesnake Education Committee. The committee's task was to identify pertinent educational uses of the area's environmental resources and to develop procedures to utilize that potential properly. A brief summary of the Committee's findings and recommendations is included in this section of the report.

General Educational Use

The RNRW offers opportunities for both day use and extended use by educational institutions. However, it is estimated that fewer than 400 primary, secondary, and university students per year use the area for educational purposes. There are 22 other sites around Missoula which are used in a variety of programs.

There exists among the majority of local educators a desire to make greater use of the Rattlesnake's educational opportunities. The major impediment to such use is lack of funding and a well-designed curriculum pertinent to the area. Other important concerns are in-service teacher training, already full schedules, and limited funding. There is also discussion regarding establishment of educational sites in the area, what kind of sites might be appropriate, and where such sites might be located.

Although many educators feel that "hands-on" experience with the environment offers the greatest benefit to students, there also exists an opportunity to bring the Rattlesnake into the classroom. An extensive mounted plant collection, over 3,500 slides (some of which compose two fully-prepared slide shows), and resource people are available for presentations, if such use could be coordinated.

Students and faculty at the University of Montana do not make regular use of the Rattlesnake. Special field trips occur relating to classes in botany, geology, wildlife, forestry, and recreation. A limited number of graduate students are the primary experiential users of the Rattlesnake as a source for information for theses.

Educational uses and needs of the general public are more difficult to document. Many organizations offer some formal outings into the RNRW, and several of these are accompanied by knowledgeable resource people. Non-sponsored use consists of individuals or small groups who hike or walk for pleasure, backpack, horseback ride, bicycle, ski, camp, picnic, and perform other outdoor activities. Although these activities are primarily recreational, secondary benefits are obtained in use of the Rattlesnake. These benefits can include educational purposes. Because an estimated 75-80% of all visitors are repeat users, an excellent opportunity exists to enhance their knowledge of the resource.

Recommendations

A substantial opportunity exists to increase educational use of the Rattlesnake in a responsible manner. Both educational institutions and the general public can benefit from development of educational plans and programs pertinent specifically to the area. For that reason, it is highly recommended that an on-going entity be formed and funded to continue the work of the present Rattlesnake Education Committee.

A continuing educational organization might consist of members of each institution/agency which has an interest in the area, of members of public user groups, and of members who represent those non-affiliated persons in the community who have a specific interest in environmental education in the Rattlesnake. The new committee could be incorporated as a non-profit organization.

The new committee's responsibilities would be to coordinate educational use, to advise educational institutions and public user groups, and to make decisions about sponsorship of activities and acquisition or publication of educational resources.

The current Rattlesnake Education Committee also recommends development of coordinated environmental studies curricula for public school use. It is also suggested that this new group might coordinate these activities in the Rattlesnake with similar activities in the 22 other environmental education sites. It is recommended that possible development of any day use sites and organized educational programs in the Rattlesnake be located in the area most readily accessible, that is, first two miles of the recreation area.

Lastly it is recommended that "Limits of Acceptable Change for Wilderness Planning" (INT-176) be adopted as an appropriate means of monitoring and encouraging responsible and reasonable use of RNRAW. Although primarily designed to evaluate recreational use, this plan will work well to direct and minimize adverse affects educational use of the resource base. A more detailed account of "Limits of Acceptable Change" is offered in the text of this report.

BACKGROUND

In October, 1980, President Carter signed legislation which created the Rattlesnake National Recreation Area and Wilderness (RNRAW). That legislation designated approximately 61,000 acres, located four miles north of Missoula, Montana, as an important municipal watershed, wildlife habitat, and recreation area. Some 33,000 acres were set aside as wilderness, while the remainder was to be managed as a National Recreation Area. In the Act which created the RNRW, special recognition was given to the Rattlesnake's value as an educational resource, and the Forest Service was given an added responsibility to manage the area for its educational value, as well as for its recreational and wilderness values.

At the time the RNRW Act was passed, approximately 31,000 acres of the Rattlesnake were in private ownership. Because the Department of Agriculture was directed by the legislation to acquire intermingled private and State lands, lengthy negotiations ensued. In November, 1983, in a public ceremony, Montana Power Company, largest of the private landholders in the Rattlesnake (21,000 acres), signed over ownership of its lands to the Forest Service. Since that time, privately-owned lands along Peterson Lake, Upper Grant Creek, and Gold Creek have also been acquired, and the process of acquisition continues.

In January, 1984, Congressman Pat Williams directed the formation of the Rattlesnake Education Committee. The committee's task was to identify pertinent educational uses of the area's environmental resources and to develop procedures to utilize that potential appropriately. The committee was uniquely composed of citizens from the local community, representatives of private enterprise, and representatives of users with special needs, such as the handicapped and senior citizens. Educators from grade school through the university level rounded out the committee's membership, as well as representatives of the Forest Service, which is responsible for managing the area. What follows is that committee's findings and recommendations for educational use of the Rattlesnake National Recreation Area and Wilderness.

THE RESOURCE

The RNRW offers a rare opportunity to study a rich history of geological processes, extensive wildlife, a variety of vegetation and habitat types, and an important watershed ecosystem in close proximity to an urban area. A brief description of the major components of the Rattlesnake resource base follows.

Geology

The 61,000 acres of the Rattlesnake National Recreation Area and Wilderness encompasses portions of the Rattlesnake, Grant Creek, and Gold Creek drainages. The terrain is rugged: elevations range from 3,500 feet, where Rattlesnake Creek leaves the area, to more than 8,900 feet at McLeod Peak. High, rocky mountain tops fall off into numerous glacial cirques and basins which sometimes contain small lakes. The bedrock lying beneath these mountains is a Belt formation composed primarily of argillite and quartzite. This material was formed millions of years ago when rivers filled ancient sea beds with layers of silt and sand. These layers, hardened by tremendous heat and pressure, were later uplifted and folded into the Rattlesnake Mountains. During the Ice Age, Glacial Lake Missoula formed when the continental ice sheet moved southward across Idaho and closed off the lower Clark Fork Valley. This closure backed up the river for 200 miles to an elevation of 4,200 feet, extending up Rattlesnake Canyon to the main Rattlesnake Creek glacier or beyond. Movement of the glaciers and the repeated filling and draining of Glacial Lake Missoula sculpted the land to much of its present form. This form is evident in U-shaped hanging valleys which drop abruptly into main canyons. Rattlesnake Canyon itself has steep, cliffy sideslopes with gentle terrain on the valley floor. Rock outcrops and cliffs are common. Approximately 40 high mountain lakes are in the main drainage, although not all are within the recreation and wilderness area.

Wildlife

The RNRW is home to abundant wildlife. Whitetail and mule deer use Strawberry Ridge and Spring, Sawmill, and Wood's gulches for critical winter range. During the hard winter months and in early spring, elk and deer migrate to grassy south slopes in Grant Creek and other foothill regions east and west of the RNRW. Grizzly bears have been observed in remote areas of the Rattlesnake, and black bears are common. Limited populations of pine marten, wolverine, fisher, and lynx are present in the area. Coyote, bobcat, mountain lion, and mountain goat have also been observed. Smaller mammals include beaver, porcupines, skunks, weasels, hoary marmot, rabbits, and a variety of rodents.

Hawks, owls, and golden eagles comprise the major raptor population. Bald eagles are observed occasionally. Grouse are the most common upland

game birds, and three species are found in the Rattlesnake watershed. Passerine birds include sparrow, robin, cedar waxwing, woodpecker, jay, warbler, starling, meadowlark, and dove. Over 95 species of birds have been documented in the Rattlesnake.

Sport fishing is not permitted in any stream less than six miles into the RNRAW. Cutthroat, dolly varden, and brook trout are present in Rattlesnake Creek. Lakes in the upper watershed have been stocked with a variety of fish by the Montana Department of Fish, Wildlife and Parks. None of the smaller lakes is believed to contain natural fish populations due to complete freezes during the long winter months. Eleven large lakes, those among the only named lakes, contain cutthroat or rainbow trout.

Vegetation

The present physiography and related vegetation of the Rattlesnake are representative of a broad region of the Rocky Mountains known as the Rocky Mountain Forest Province--Douglas Fir Forest Section. The Rocky Mountain Forest Province covers an area of the central Rocky Mountains, some 187,300 square miles in size, or about 5.7% of the land area in the United States. All elements of the Rocky Mountain Forest Province-- Douglas Fir Forest Section are present in the Rattlesnake National Recreation and Wilderness Area, making it an excellent study area.

The Douglas Fir Forest Section is characterized by well-defined vegetation zones. The uppermost zone in elevation is the alpine zone, identified by alpine tundra and the absence of trees. Below the alpine zone is the subalpine zone, dominated in most areas by Engleman spruce, whitebark pine, and subalpine fir. The next lower zone is the montane zone, characterized by the prevalence of Douglas fir and ponderosa pine. In the upper part of the montane zone and the lower subalpine zone, the occurrence of fire favors the development of seral aspen and lodgepole pine forests. Below the montane zone is the foothill zone, a dry area of rocky slopes dominated by shrubs and grasses with areas of open woodlands and pockets of forests in moist areas and on north slopes. River and creek wetlands which support deciduous forests, hydric shrubs, and herbacious vegetation comprise the floodplain zones.

Altogether, over 600 species of plants exist within the RNRAW. Some of the more common shrubs include snowberry, huckleberry, ninebark, chokecherry, serviceberry and kinnikinnick. Beargrass is abundant in upper elevations beneath the forest canopy. Elk sedge and bluebunch wheatgrass are common species at lower elevations. Many flowering plants such as balsamroot, bluebell, buttercup, phlox, Indian paintbrush, rose, and lupine, among others, are seen in the Rattlesnake.

Watershed

Rattlesnake Creek, the watershed's principal stream, flows for a distance of 22 miles to its confluence with the Clark Fork River. The creek and its numerous tributaries are fed by approximately 100 inches of annual precipitation, much of that falling as snow in the upper elevations. Rattlesnake Creek has been a major source of municipal water for the Missoula area since before the turn of the century. However, during the last 40 years, numerous deep wells scattered throughout the Missoula area have been added to meet increasing water demands. In 1983, use of Rattlesnake Creek as a municipal water source was discontinued due, in part, to the lack of sanitation provided by the antiquated gravity-fed system. It is believed that ground water sources underlying Missoula are extensive and could meet all of the city's water needs for many years. However, Rattlesnake Creek and the watershed which supports it, remains a viable and important water source.

USE BY EDUCATIONAL INSTITUTIONS

Availability of Resources

The RNRW offers opportunities for both day use and extended use by educational institutions. Day use is facilitated by walking access for most elementary field trips. Such access is most readily available in the area between the intake dam and the parking lot, as well as the area between the parking lot and Spring Gulch. (See map of the area on following page.) It is probable that older students, such as those in high school, might be able to walk an additional mile beyond Spring Gulch. Also, because the National Recreation Area provides relatively flat, easy hiking up the main drainage, extended use of the area may be made in overnight field trips.

A wealth of resource material on the Rattlesnake is available for educational programs: numerous field guides, interpretive material, bird lists, research reports, theses, and dissertations. The Wilderness Institute has a partial bibliography of these materials. An excellent pressed and mounted collection of each of the 600 plants of the Rattlesnake is available from the Missoula County Library. A privately-owned collection of over 3,500 35mm color slides which document plants, animals, birds, amphibians, insects, fish, reptiles, scenic vistas, people and their activities, and historical sites is also available on request. Some of these slides have been organized into slide shows, "The Sacred Hoop" and "The Timeless Journey" with music and narration.

In the past, resource people from the Wilderness Institute, Forest Service, and Friends of the Rattlesnake have been available on a limited basis to accompany school groups. Many of these individuals have volunteered their time and energy.

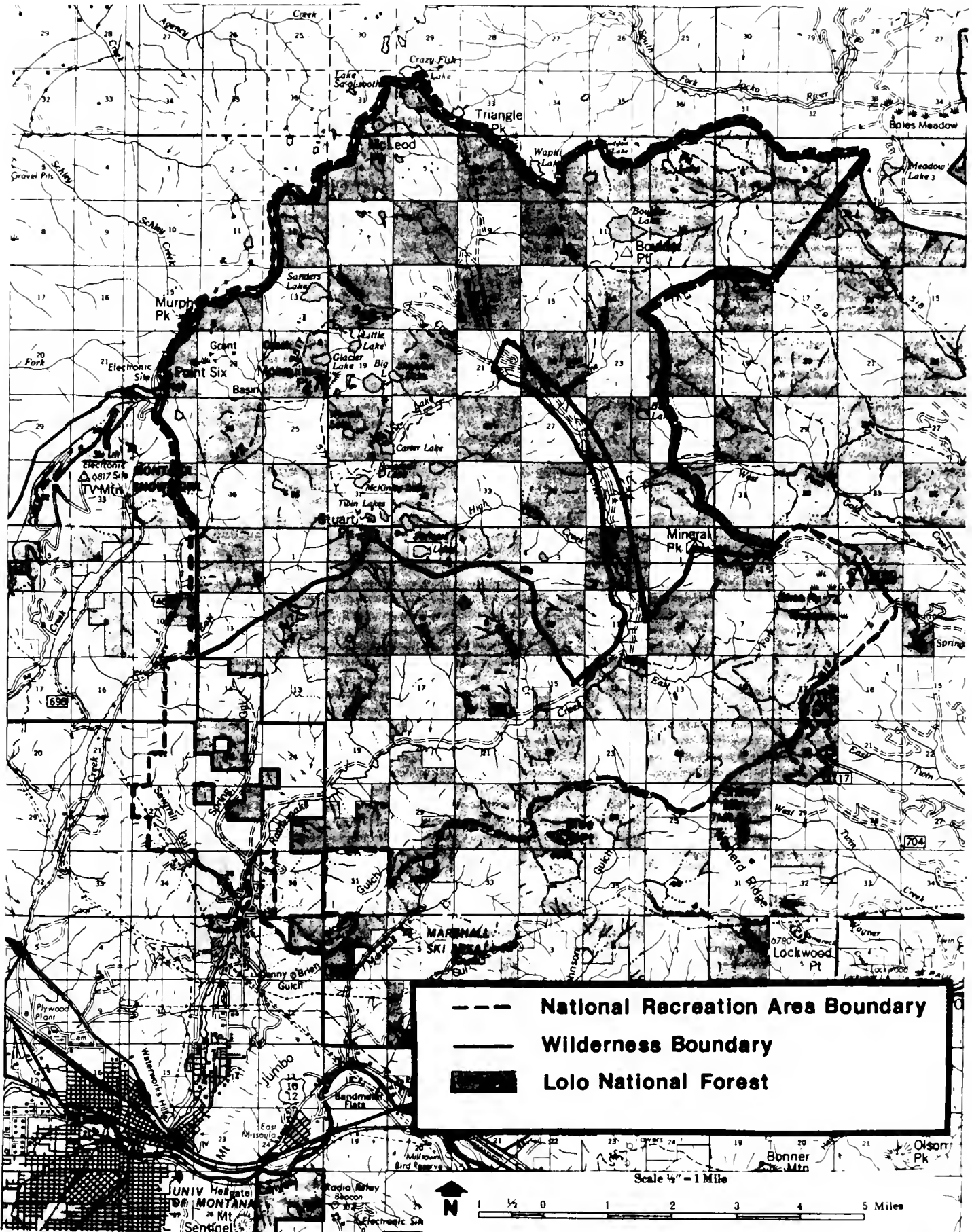
Current Educational Use

Current educational use of the Rattlesnake by schools is relatively light. It is estimated that fewer than 400 primary, secondary, and university students per year use the area for educational purposes. However, there is considerable interest in educational opportunities in the RNRW, particularly if educational sites and programs are developed.

Public Elementary Schools

Currently, DeSmet School has developed an outdoor education curriculum for use in its own attendance area. It has used the lower

Rattlesnake National Recreation Area and Wilderness



Rattlesnake for occasional "nature walks." Lolo, Hellgate, and Clinton schools each use other areas for outdoor education programs, but all are interested in using the Rattlesnake if field trips could be facilitated. Target Range School had a site in their attendance area, but no longer uses it. They, too, would be interested in utilizing the RNRW if the educational benefits were great enough for students and if teachers' schedules could accommodate such a program. Bonner School has access to a nearby site on Champion International Corporation land which is used in their science program. Bonner does not indicate an interest in use of the Rattlesnake, due to its distance.

Missoula School District #1, which encompasses both public elementary and middle schools, does not currently use the Rattlesnake on a regular basis. That use which occurs does so through the efforts of individual teachers. For instance, 85 7th and 8th graders visited the area in March of 1985 for a convocation.

Public Secondary Schools

Missoula County high schools offers a variety of programs which make use of 22 different local sites: Rattlesnake-Greenough, Lolo, Ninepipes, Bison Range, Flathead Lake, South Hills, Lincoln Hills, Fort Missoula, City dump, Bearmouth, Miller Pond, Blue Mountain, Metcalf Wildlife Refuge, Arlee Fish Hatchery, old Milwaukee railroad tracks, Frenchtown Pond, Deer Creek, Pattee Canyon, Mount Sentinel, Clark Fork River, and Pattee Pond. The Rattlesnake is not used regularly, but it serves as a location for special field trips.

Private Elementary and Secondary Schools

Loyola, St. Joseph's, and Mountain View schools all have active outdoor science and education programs. Each of the schools currently uses sites other than the Rattlesnake. However, all of these private schools have expressed an interest in making use of the Rattlesnake if programs could be developed in which they could take part.

University of Montana

The primary use of the Rattlesnake by University of Montana students and faculty involves special field trips relating to botany, geology, and recreation. There is no regular educational use of the area. Several resource management classes use the area for case studies. However, their work is done from previously assembled written materials, and they do not actually visit the RNRW. During the last fifteen years, graduate students are the primary hands-on users of the Rattlesnake as a major study area for their theses and dissertations.

A relatively new educational use of the Rattlesnake has developed during the last year: teacher workshops for summer classes in the School of Education. The U.S. Forest Service and Wilderness Institute are co-sponsoring these environmental education workshops for teachers and resource persons.

Projected Use by Educational Institutions

In February of 1983, Missoula School District 1 conducted a needs assessment for outdoor educational sites for grades K-8. The survey indicated concern about transportation, funding, and crowding already full curriculums even further. Due to current budget restrictions, many teachers find transportation costs an obstacle, despite the Rattlesnake's proximity to Missoula. The majority of respondents (72%) felt that use sites should be developed, and 52% indicated they would use them. Although only 7% of the respondents to the survey were opposed to developing outdoor sites, nearly 19% said they would not use such sites. (A certain percentage of individuals were undecided in each category.) Reasons given for reluctance to use the Rattlesnake centered around issues of lack of outdoor study units which supplement the general science program, already full schedules, lack of in-service training for teachers, and budget restrictions. If these issues could be resolved, there is substantial enthusiasm for coordinating use of the Rattlesnake with other outdoor education sites. Specific areas of educational interest are trees, wildflowers, geology, plants, birds, animals, and weather.

Conclusion

The Rattlesnake is one of many areas to be utilized in outdoor education programs. Without more formally developed sites, better funding, and a specific curriculum, it appears direct use of the Rattlesnake by educational institutions will remain relatively light. In the present system, any increases in use which might occur would result from communications by teachers or from an increased availability of resource people to accompany school groups.

There is much discussion as to what kind of educational facilities could be developed, where to locate them, and what their impact will be on the Rattlesnake ecosystem. This committee recommends that possible development of any day use sites and organized programs for educational purposes be located in that area most accessible: the first two miles of the Recreation Area. At this writing, two sites are suggested for further planning and development. One is the lower end of the National Recreation Area between the dam and the existing trailhead. The other is the old Wooten Estate in Sawmill Gulch. Both sites have excellent ecological diversity and present numerous opportunities for outdoor education. Little recreation use occurs on either of these sites, so possible conflict with recreationists is not an issue.

However, there are two ways to take advantage of the educational opportunities offered in the Rattlesnake. The first method, as previously described, is to go into the Recreation Area to obtain direct experience with the environment. The second method of utilizing the area as an educational resource is to bring the Rattlesnake into the classroom. As noted previously, there are a variety of reference materials available to enhance study. This committee concluded that the major present stumbling block to use of the Rattlesnake is lack of a coordinated curriculum.

It is recommended that an entity be formed and funded to direct further development of the Rattlesnake as an educational resource. This entity would be responsible for fund raising, networking between educational institutions, developing a study curriculum, and long range educational planning. The same organization could investigate the need for an educational center or facility and its placement. Additionally, such an entity could explore how the RNRAW could complement other environmental education efforts in Missoula and how our program could become a model for similar programs across the nation.

USE BY THE GENERAL PUBLIC

Sponsored Programs

Education use and needs of the general public are much more difficult to determine. There are only a limited number of programs which are currently in operation, and the population segment these programs reach is fairly small. Local organizations which offer specific programs for community use of the Rattlesnake are as follows.

The Wilderness Institute at the University of Montana and Montana Power Company offer Senior Citizen Wildland Outings, and four-to-six such trips are made between May and September of each year. Senior citizens are transported by van as far into the RNRAW as Franklin Bridge and are accompanied by a knowledgeable resource person. Several stops are planned en route with the opportunity to observe first-hand and experience the material presented by the resource person. A local outfitter has also developed plans for a horse-drawn wagon which would accommodate both senior citizens and the physically handicapped in a similar program, but no such trips have been made as of this writing.

The Campfire organization sponsors a field trip of 40-50 children. There is only one such major trip a year, usually each spring. Individual troops occasionally take walks in the RNRAW, and individual Girl Scout troops make occasional use of the area in the same manner. There are no resource people who accompany these groups on a regular basis. The YMCA, which operated a day camp in previous years, is currently inactive in the Rattlesnake. Individual Boy Scout troops and local 4-H groups also make occasional use of the area.

Missoula Youth Homes provides a program in which each of the three group homes takes six to eight children into the Rattlesnake on a field trip. These trips occur monthly; and on occasion, undergraduates from the University of Montana are available to enhance outings.

Friends of the Rattlesnake offers the public a few history hikes each year. An historian always accompanies these outings. Additionally, a local naturalist sponsors one or two hikes each season and provides discourse on edible plants and the vegetation and wildlife of the resource area in general.

The Wilderness Institute also offers to undergraduates Wilderness and Civilization field trips each year. Undergraduates also make occasional trips with group homes as part of a practicum. As previously mentioned, the Institute also works in the Rattlesnake with individual teachers, primarily those who instruct 6th grade, and provides an educational program to them.

The U.S. Forest Service conducts official tours of the RNRW, although infrequently. They also sponsor four or five Nature Walks per season.

Non-sponsored Use

Educational use and needs of the rest of the public-at-large are much less easily documented. Such users consist of individuals or small groups who hike or walk for pleasure, backpack, horseback ride, bicycle, ski, camp, picnic, and perform other outdoor activities. These groups use the Rattlesnake in a much more informal and less structured manner than programs offered by community groups or educational institutions. It can be assumed that the majority of the people or groups who come independently to the Rattlesnake do so because of the recreation opportunities the area offers. However, if recreation were the only goal, there are ample opportunities elsewhere to hike, bike, ski, picnic, and otherwise enjoy the outdoors. Consequently, it is evident there may be secondary benefits obtained in use of the Rattlesnake. These benefits can include the educational opportunities present in the RNRW, such as amateur bird watching or plant or rock identification.

A variety of studies have been conducted to analyze trends of recreational use. It was expected that with national designation as a recreation area and wilderness, use of the Rattlesnake would increase dramatically. That has not been the case: the increase has been only moderate. Because it is an eight or nine mile hike into the wilderness, use has become more prevalent in the Recreation Area and less so in the wilderness. Concurrently, the average group size has dropped, while the number of sole entrants such as joggers and hikers has increased. There appears to be no major difference between the number of males and females who visit the Rattlesnake, but there has been an increase in the number of students who spend time in the area. Because an estimated 75-80% of all visitors are repeat users, an excellent opportunity exists to enhance their knowledge of the resource.

In a study regarding user satisfaction, the major sources of satisfaction in response to "learning about nature" include enjoyment of scenery, solitude, and the activity in which users participated. Satisfaction with scenery rated the highest score and users specified wildlife, wildflowers, creeks and lakes, scenic vistas, sunrises, and viewing the moon and stars as high points of their experience.

Conclusion

It is recommended that the same entity which would be responsible to educational institutions for further development of the Rattlesnake as an education resource also function as a means of coordinating educational

information for non-academic user groups. Such information could include publication of brochures and guidebooks, regular availability of resource persons to accompany groups, and sponsorship of seminars and workshops or programs regarding specific attributes of the Rattlesnake. Once again, this organization would also be responsible for monitoring long-term impact of use of the RNRAW.

RECOMMENDATIONS

After much research and discussion, the Rattlesnake Education Committee concluded there were unilateral and specific concerns to be resolved regarding the future of the RNRAW. These four concerns are as follows.

1. There is no doubt that an on-going entity is needed to sponsor and manage educational use of the area. It was agreed that a major responsibility of such an entity would be to organize development of a study curriculum and a network system between educational institutions, between community programs and the public, and between these user groups and the development of new programs. An additional attribute of an aggressive networking program is that the entity becomes a clearinghouse for the entire community, as well as regional, state, and national inquiries. This entity would also be responsible for getting the community more involved in the RNRAW and for coordinating use of the area. Furthermore, the organization would concern itself with what kinds of publicity are pertinent, what sort of brochures and pamphlets describing the area and its educational opportunities should be available, and how written material will be made available to potential users. Two more important functions of the sponsoring entity should be long range planning of educational use of the area, as well as fund-raising to assist the entity's ability to carry out its responsibilities in a productive manner.

Four possible models for a more permanent organization were developed. The first is a "do nothing" model which lets the current Rattlesnake Education Committee expire and presumes the Forest Service, formal, and informal educational organizations will do whatever they wish. This is not a recommended approach to providing for education use of the Rattlesnake.

The second model is based on Forest Service development of an advisory group. This unincorporated group of appointed members would have no specific authority and would vote only on recommendations. By nature, Model #2 could provide only selected public input.

Model #3 could be an unincorporated advisory group parallel in composition to the current committee and could be available to any group which might implement an education program. This advisory group would have no specific authority and would be responsible to the individual agencies which made its appointments and to those institutions receiving its advice. Again, by virtue of its structure, public input would be limited.

The fourth model is the one which the current Rattlesnake Education Committee recommends as the preferred means of providing for continued educational use of the RNRAW. Model #4 could consist of three categories of members. The first category could be members appointed by each

appropriate agency or educational institution, such as the Forest Service, University of Montana, School District 1, et al. The second category of members could be representatives of community user groups. A third category could consist of appointments made by a support group. This support group would be open to the general public and composed of people who had a specific interest in environmental education in the Rattlesnake. The on-going entity could be incorporated as a non-profit organization. This entity could coordinate educational use, advise educational institutions and various user groups, coordinate use of the Rattlesnake with use of other environmental education sites, and make decisions about sponsorship of activities and acquisition of educational resources.

The proposed entity would be accountable to the agencies its membership represents and would serve as an advisor to those agencies, as well as to the Forest Service. This committee would have authority to make decisions about new services and programs it may choose to offer and about acquisition of funds and other resources needed to function efficiently. Up to five years would be necessary to fully implement all the functions of this committee and bring it up to maximum effectiveness.

2. The work of the current Rattlesnake Education Committee also lead to a second group of concerns targeted on the Rattlesnake's place in the entire panorama of outdoor opportunities. It was asked whether the Rattlesnake ought to be a focal point of an environmental education program, or if it should be played down. An auxiliary concern, then, became how much publicity should the Rattlesnake receive?

A consensus was reached among committee members regarding these issues. It is expected that attention will occur not only on a local level, but also on state and national levels. While the Missoula area is proud of what the RNRWA has to offer and expects to be a gracious host, it was determined the focus of any entity which manages the area should be directed locally and regionally, and that focus should be aimed toward specific user groups. No national publicity campaign is contemplated, although we hope work in the area of educational development serves as a model for other programs around the country.

3. The Rattlesnake Education Committee agreed that some form of public involvement is needed in the environmental education process. The exact nature and extent of public involvement is not well-defined as of this writing. It is recommended that the entity which becomes responsible for managing educational use in the Rattlesnake incorporate in some manner representatives from the general public so that the public's needs may be served during the development of educational programs.

4. Because the Rattlesnake's value as an educational resource depends on maintaining its wild and natural character, the last and perhaps most

complex concern raised by the committee is this: Given what appears to be substantial interest in environmental education in the Missoula area, how can use be monitored and directed in such a manner as to minimize impact on the resource base? Because educational use is often an auxiliary to recreational use, the committee concurred that "Limits of Acceptable Change for Wilderness Planning" (LAC) is an appropriate means of monitoring and encouraging responsible and reasonable educational use of the RNRW.

"Limits of Acceptable Change for Wilderness Planning" is a General Technical Report (INT-176) written by several experts in a variety of natural resource management fields and published by the Intermountain Forest and Range Experiment Station in Ogden, Utah. This system provides a framework for establishing acceptable and appropriate resource and social conditions in recreational settings. The LAC process requires that managers define desired environmental conditions and undertake actions to maintain or achieve those conditions.

A major goal of wilderness management is to maintain qualities of naturalness and solitude. These qualities are threatened by human-induced changes, but nonetheless, human use is a legitimate employment of wilderness. Subsequently, it becomes necessary to determine the amount of change to be allowed in the RNRW. LAC is a system which defines explicit, quantitative standards, appropriate management actions, and procedures for monitoring and evaluating management performance. This system could provide a visible and logical means of coping with increasing educational demands on the RNRW.

The LAC is not a new idea. Its roots are in reformation of the recreational carrying capacity concept. However, rather than determining how much use the area can tolerate, the primary focus is on the most desirable condition of the resource. The LAC offers specific, measurable objectives to accommodate the impacts of human educational use of wildlands. There are nine steps involved in that process.

Step 1 identifies those public educational issues and managerial concerns which relate to distinctive features and characteristics of the Rattlesnake. It also indicates the relationship of the Rattlesnake to other units of the wilderness system, as well as to non-wilderness recreation areas.

Step 2 defines a series of opportunity classes. An opportunity class describes both the resource and social conditions acceptable for that class. Type of management is also determined for the opportunity class.

Step 3 identifies indicators that, singly or in combination, are indicative of the condition of the opportunity class.

Step 4 is an objective and systematic inventory of indicators of concern or interest.

Step 5 sets specific standards by which to measure the indicators.

Step 6 determines which of several possible resource and social conditions are to be maintained or achieved. Inventory from Step 4 and issues from Step 1 are balanced against the reality of what exists and what is possible.

Step 7 discovers differences, if any, which exist between current conditions (Step 4) and standards (Step 5). Then appropriate management actions for each opportunity class are determined, as well as the cost of implementing such action.

Step 8 accommodates impediments to desired management by selection of preferred alternatives.

Lastly, Step 9 implements the LAC plan and monitors its effectiveness. Monitoring consists of assessing wildland conditions and their proximity to standards, assessing where resource or social change is greatest, determining where understanding of educational management action and its effect is poorest, and/or determining any unanticipated changes such as access, adjacent land use, or other impacts.

SUMMARY

An on-going entity needs to be formed and funded to assist in developing and coordinating use of the RNRAW as an educational resource. This entity currently has available to it a wealth of existing educational resources, broad support from the community and educational institutions, and a plethora of well-qualified people who are willing to take part in such an endeavor. The Rattlesnake Educational Committee has developed recommendations for educational use of the area and for monitoring the impacts of that use. However, greater resources than are available to the present committee are necessary to transform these recommendations into the actual means by which all citizens may be provided with a rich and rewarding environmental experience in the Rattlesnake National Recreation Area and Wilderness.

